

Cook



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

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 HEALTH EFFECTS DIVISION
 SCIENTIFIC DATA REVIEWS
 EPA SERIES 361

AUG 10 1995

 OFFICE OF
 PREVENTION, PESTICIDES AND
 TOXIC SUBSTANCES
MEMORANDUM

127901

SUBJECT: PP3F4186/FAP3H5661. Fenpropathrin (127901 Danitol) on Tomatoes and Strawberries. Amendment dated 9/1/94. MRID No. 43360500, 43360501, 43360502, 43360503. CBTS Nos. 14342, 14343. Barcode D207266, D207270.

and

PP3F4186/FAP3H5661. Fenpropathrin (127901 Danitol) on Tomatoes and Strawberries. Amendment dated 5/16/95. MRID No. 43652400, 43652401. CBTS Nos. 15651, 15652. Barcode D215834, D2155842.

FROM: R. W. Cook, Chemist *RWC*
 Chemistry Branch I-Tolerance Support
 Health Effects Division (7509C)

TO: G. LaRocca, PM 15
 Insecticide-Rodenticide Branch,
 Registration Division (7505C)
 and
 J. Smith, Registration Section
 Chemical Coordination Branch
 Health Effects Division (7509C)

THRU: M. Metzger, Branch Chief
 Chemistry Branch I-Tolerance Support
 Health Effects Division (7509C) *Michael A. Metzger*

Valent USA Corporation has previously requested tolerances for fenpropathrin, alpha-cyano-3-phenoxybenzyl 2,2,3,3-tetramethylcyclopropanecarboxylate, in or on tomatoes at 0.5 ppm, tomato cannery waste at 5 ppm and on strawberries at 2 ppm. In a more recent submission, the petitioner changed the proposed tolerance level from 0.5 to 0.6 ppm for



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tomatoes. The proposal for cannery waste was deleted and replaced with proposals for tolerances on tomato pomace, wet, at 6 ppm and tomato pomace, dry, at 30 ppm. The label has also been revised in this submission to add a use with a higher application rate of 0.3 lbs. a.i./A. to tomatoes.

Tolerances have been established for fenpropathrin on cotton seed at 1 ppm, cotton seed byproducts and meat and milk under 40 CFR 180.466, 185/186.3225. CBTS has recommended for tolerances on apples, pears, grapes and oranges. There is no Registration Standard for fenpropathrin.

Based upon recent changes in Table II (1995 Revision, to be announced in the near future), tomato pomace, wet and tomato pomace, dry, are no longer considered significant animal feedstuffs. Absent such feedstuffs, secondary residues in meat, milk, poultry and eggs are not a consideration for the proposed uses on tomatoes and strawberries.

Conclusions

1. The nature of the residue in tomatoes is adequately understood. The residue of concern in tomatoes is fenpropathrin, per se.
2. We conclude that adequate methodology is available for the enforcement of the proposed tolerances of fenpropathrin per se on tomatoes and strawberries.
3. CBTS concludes that storage stability data for fenpropathrin per se are adequate for the subject commodities; the tomato and strawberry samples were stored for less than 6 months prior to analyses.
4. CBTS concludes that residues of fenpropathrin per se in strawberries are not likely to exceed the proposed tolerance of 2 ppm.
5. CBTS concludes that residues of fenpropathrin per se in tomatoes are not likely to exceed the proposed tolerance of 0.6 ppm from application of 0.2 lbs. a.i./A.. Residues in the processed commodities tomato puree and tomato paste are not expected to exceed the level in the raw agricultural commodity. For the proposed use on tomatoes to control yellowstriped armyworms and fruitworms at 0.3 lbs. a.i./A., residues may exceed the proposed 0.6 ppm tolerance. The petitioner should propose a higher tolerance level of 1 ppm if he wishes to retain this use on the revised label.
- 6a CBTS concludes that the milk, meat and egg tolerances are not required in support of the proposed use on tomatoes, since Table II (1995 Revision, to be announced in the near future) has removed tomato pomaces as significant animal feedstuffs. Therefore, secondary residues of fenpropathrin in livestock commodities are not expected.

In addition, for control of yellowstriped armyworms and fruitworms, the petitioner has increased the maximum dosage rate for fenpropathrin from 0.2 lbs. a.i./A. to 0.3 lbs. a.i./A., and further, decreased the treatment to harvest interval from 7 days to 3 days. The maximum seasonal dosage of 0.8 lbs. a.i./A. is retained for both uses.

Nature of the Residue in Plants

Tomato Metabolism study

MRID 43399201:

A Metabolism Study with [Cyclopropyl-1-¹⁴C] and [Phenyl-U-¹⁴C] - Fenpropathrin on Tomato. Fred, C. Baker, Robert F. Toia, May 9, 1995. Sponsored by Valent U.S.A. Corporation. Performing Laboratory PTRL West, Richmond, California. PTRL Rpt. No. 486W-1, 206 pages.

The petitioner has conducted another tomato metabolism study, to provide more detail about the nature of the residue in tomatoes.

One-month old tomato plants were transplanted into 4 gallon pots, each containing one tomato plant. The potted tomato plants were grown in a screenhouse. Each treatment had five plants, 5 for control, 5 for the phenyl label fenpropathrin, and 5 for the cyclopropyl label fenpropathrin. individual pots were moved to an application area for each fenpropathrin application, and then returned to its own, separate screenhouse. The two ¹⁴C label screenhouses were more than 25 feet apart and the control samples were more than 100 feet apart. Normal screenhouse cultural practices were followed: tomato plants were staked up and lightly pruned. Plants were watered by applying water to the soil surface in each pot. Each treatment level was treated four times with ¹⁴C solutions of fenpropathrin labeled with phenyl or cyclopropyl labels. Applications of the cyclopropyl label fenpropathrin and phenyl label fenpropathrin were made at 7 day intervals, and the application rate was nominally 0.2 lbs. a.i./A, totaling 0.83 lbs. a.i./A. of each ¹⁴C label over the four applications. It was calculated that each plant would be equivalent in area to a 20 inch diameter circle, and thus 0.0000501 acre. Harvest samples of mature and immature fruit were obtained on Oct. 14, 1994; control samples were obtained first, followed by the cyclopropyl label fenpropathrin treated plants and then phenyl label fenpropathrin treated plants. Additionally, samples of plant foliage, both green and senescent, were obtained. The fruit was separated into mature and immature fruit, and the immature fruit was not rinsed. Approximately 75% of the harvested mature fruit was rinsed by immersing each mature fruit in a beaker partially filled with hexane:acetone; each mature fruit was further rinsed with a small 1-2 mL pipette rinse into the same beaker. The remaining 25% was not rinsed. The rinsed fruit was allowed to air dry before packing into plastic sample bags. The collected rinsate (for each separate label) was collected and labeled and shipped to the analytical laboratory with other plant samples on the day of harvest.

equivalent to <0.01 ppm fenpropathrin. The unextractable materials accounted only about 0.003 ppm (0.05%) of the ^{14}C from both the phenyl label fenpropathrin and from the cyclopropyl label fenpropathrin.

In extracts of the ^{14}C -phenyl label fenpropathrin treated tomatoes (containing 0.649 ppm by total combustion), 95% (0.618 ppm) was fenpropathrin, 2.07% (0.013 ppm) was identified as polar materials, and 2.66% was identified as 8 other peaks, each 0.09% - 0.84% and each equivalent to <0.01 ppm fenpropathrin.

In extracts of the ^{14}C -cyclopropyl label fenpropathrin treated tomatoes (containing 0.531 ppm by total combustion), 98% (0.519 ppm) was fenpropathrin, 1.82% (0.01 ppm) was identified as polar materials, and 0.045% was identified as 2 other peaks, each 0.16% - 0.28% and each equivalent to <0.01 ppm fenpropathrin.

The petitioner speculates that the extracted polar materials from cyclopropyl label fenpropathrin may contain, based upon retention times for standards, *trans*-TMPA-COOH and or *trans*-TMPA-CH₂OH.

A subsample of the phenyl label fenpropathrin tomato rinsate was cleaned up by TLC and analyzed by GC-MS. The petitioner reports that the mass spectrum of the recovered ^{14}C is very similar to the spectrum of authentic fenpropathrin, with major ions at *m/z* 97, 125, 181, 265, and 349.

Conclusions:

The nature of the residue in tomatoes is adequately understood. The residue of concern in tomatoes is fenpropathrin, per se.

Residue Data

Mexican Tomato Residue Trials

MRID 43360502: Olsen, Bernard; Lai, J. C.; Butts, Edgar R.: Herald EC (375 Grams A.I. Fenpropathrin Spray on Tomatoes in Mexico. Performing Laboratory: (Field) Plant Sciences, Inc, 342 Green Valley Road, Watsonville, California, 95076. Performing Laboratory: (Analytical) Valent Dublin Laboratory, 6560 Trinity Court, Dublin, California, 95568.

The petitioner provides field trial residue data for tomatoes grown in Mexico since tomatoes imported from Mexico account for about 97% of all tomatoes imported into the US. The geographic region of Mexico where the field trials were conducted produce about 100% of the Mexican tomatoes imported into the US.

Test No. and Location	Sample No.	Treatment kg/ha (lbs. a.i./A)	PHI (Days)	Fenpropathrin (ppm)
MX-01-C-1	1a, 2a	0 (Control)	3	<0.01, <0.05
Culiácan, Sinaloa,	3a, 4a	4 x 0.1875 kg ai/ha	3	0.16, 0.18
Mexico	5a, 6a	4 x 0.3750 kg ai/ha	3	0.45, 0.47
MX-01-C-2	1a, 2a	0 (Control)	3	<0.01, <0.01
Culiácan, Sinaloa,	3a, 4a	4 x 0.1875 kg ai/ha	3	0.10, 0.09
Mexico	5a, 6a	4 x 0.3750 kg ai/ha	3	0.29, 0.33
MX-01-L-1	1a, 2a	0 (Control)	3	<0.01, <0.01
Los Mochis, Sinaloa,	3a, 4a	4 x 0.1875 kg ai/ha	3	0.05, 0.07
Mexico	5a, 6a	4 x 0.3750 kg ai/ha	3	0.10, 0.10
MX-01-L-2	1a, 2a	0 (Control)	3	<0.01, <0.01
Los Mochis, Sinaloa,	3a, 4a	4 x 0.1875 kg ai/ha	3	0.08, 0.08
Mexico	5a, 6a	4 x 0.3750 kg ai/ha	3	0.11, 0.16
MX-01-S-1	1a, 2a	0 (Control)	3	<0.01, <0.01
San Quentin, Baja	3a, 4a	4 x 0.1875 kg ai/ha	3	0.29, 0.21
California Norte, Mexico	5a, 6a	4 x 0.3750 kg ai/ha	3	0.55, 0.65
MX-01-S-2	1a, 2a	0 (Control)	3	<0.01, <0.01
Colonia Vincente	3a, 4a	4 x 0.1875 kg ai/ha	3	0.23, 0.20
Guerrero, Baja California	5a, 6a	4 x 0.3750 kg ai/ha	3	0.48, 0.47
Norte, Mexico				
MX-01-H-1	1a, 2a	0 (Control)	3	<0.01, <0.01
Huatobampo, Sonora,	3a, 4a	4 x 0.1875 kg ai/ha	3	0.06, 0.03
Mexico	5a, 6a	4 x 0.3750 kg ai/ha	3	0.13, 0.12

0.1875 kg ai/ha = 0.167 lbs. a.i./A.

0.3750 kg ai/ha = 0.334 lbs. a.i./A.

From Table, pages 19-20, MRID 43360502

U.S. Magnitude of the Residue Field Trials: 1992 -1993

MRID 43360501: Green, C. A.: Magnitude of the Residues of Fenpropathrin in/on Tomatoes and Processed Tomato Products.

Performing Laboratory: (Field) Hulst Research Farm Services, Inc. 4449 Tully Road, Hughson, California 95326; Plant Sciences, Inc, 342 Green Valley Road, Watsonville, California 95076; California Ag. Research Inc. 41441 N. Vineland, Kerman, California 93630; Ag Consultants, 270 S. Main Street, New Holland, Ohio 43145; Agsearch Company, 1705 Wilson, Conklin, Michigan 49403; Heartland Technologies, 6060 Castleway West, Suite 130, Indianapolis, Indiana 46250; Crop Management Services. P. O. Box. 510, Hereford Pennsylvania 10806; Carolina Ag Research, Inc. P. O. Box. 132, Elko, South Carolina 29826; and Roger Boren, Inc. 1706 Jonquil, McAllan, Texas 78501. (Processing) William J. Englar & Associates, Inc. P. O. Box 1548, Moses Lake, Washington 98837.

Test No. and Location	Treatment kg/ha (lbs. a.i./A)	PHI (Days)	Fenpropathrin (ppm)
1992 Field Trials			
V-1032-A	0 (Control)	3	Not Reported
California	4 x 0.2 lbs. a.i./A.	3	0.34, 0.61
1992	4 x 1.0 lbs. a.i./A.	3	2.5, 2.9
1993 Field Trials			
V-10633-A	0 (Control)	3	Not Reported
California, 1993	4 x 0.2 lbs. a.i./A.	3	0.24, 0.18
V-10633-B	0 (Control)	3	Not Reported
California, 1993	4 x 0.2 lbs. a.i./A.	3	0.22, 0.32
	4 x 0.4 lbs. a.i./A.	3	0.49, 0.49
V-10633-D	0 (Control)	3	Not Reported
Ohio, 1993	4 x 0.2 lbs. a.i./A.	3	0.64, 0.46
V-10633-E	0 (Control)	3	Not reported
Michigan, 1993	4 x 0.2 lbs. a.i./A.	3	0.04, 0.06
	4 x 0.4 lbs. a.i./A.	3	0.21, 0.13
V-10633-F	0 (Control)	3	Not Reported
Indiana, 1993	4 x 0.2 lbs. a.i./A.	3	0.12, 0.10
V-10633-I	0 (Control)	3	Not Reported
Texas, 1993	4 x 0.2 lbs. a.i./A.	3	0.15, 0.21
V-10633-H	0 (Control)	3	Not Reported
South Carolina, 1993	4 x 0.2 lbs. a.i./A.	3	0.08, 0.07
1993 Field Trials Decline Data			
V-10633-C	0 (Control)		Not reported
California, 1993	4 x 0.2 lbs. a.i./A.	1	0.38, 0.46
		3	0.30, 0.29
		7	0.28, 0.27
		14	0.19, 0.24
V-10633-G	0 (Control)		Not Reported
New Jersey, 1993	4 x 0.2 lbs. a.i./A.	1	0.21, 0.21
		3	0.18, 0.20
		7	0.14, 0.13
		14	0.09, 0.08

From Table, pages 28-29, MRID 43360501

In trial V-10633-D the spray volume applied was less than required by protocol and a backpack applicator was used rather than a tractor applicator. These deviations likely caused a residue of 0.64 ppm, slightly over the proposed tolerance level.

Residues of fenpropathrin are not likely to exceed the proposed tolerance of 0.6 ppm, based upon a maximum of four applications of 0.2 lbs. a.i./A. with a three day preharvest interval.

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cc:R. W. Cook, RF, Circu, PP3F4186.

7509:CBTS:RWCook:CM#2:Rm804H:8/4/95

RDI:RSQuick:8/4/95:RLoranger:8/7/95:MMetzger:8/7/95



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